patient researches. With the wider and more rapid dissemination of knowledge which obtains at the present day, we may hope that within a comparatively few years we may have strophanthus used as carefully as is digitalis today. That it possesses distinct advantages over the latter drug is undoubted, and it is equally certain that it is free from the greatest danger which the use of digitalis entails—namely, vaso-constriction.

We may say that success in the administration of strophanthus requires: 1. An active, well-made preparation from a reliable source. 2. Avoidance of its use in fully or over-compensated hearts, in those which present advanced muscular degeneration or mechanical defects of high degree. 3. The use of not too large or too frequently repeated doses. From my own observations, the dose of five drops of a reliable tincture three or possibly four times a day is sufficient.

In conclusion, I believe that, considering the limitations just enumerated, strophanthus is the drug of choice in:

1. All cases in which we wish to establish compensation.
2. All case of arterial degeneration in which a remedy which causes more energetic cardiac contractions is required.
3. All cases of cardiac disease where diuresis is necessary.
4. All cases of weak or irritable hearts.
5. All cases of cardiac disease in childhood or old age.

749 MADISON AVE., January 14, 1897.

PERFORATION OF THE INFERIOR VENA CAVA IN AMŒBIC ABSCESSES OF THE LIVER.

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THE accident, for such it must be regarded, described in the title of this paper, judging from the medical literature, is of most infrequent occurrence. My examination of the current text-books and the older authorities on pathological anatomy failed to bring to light even an allusion to perforation of the vena cava as one of the possible complications of abscesses of the liver, and in going through the titles in the Surgeon-General's Library I have been able to find only one instance of this condition recorded. The main facts of this case, which was described by Colin in 1873 (*Le Courrier Médical et la Réforme Médicale*, tome xxiii. p. 268), are as follows:

The patient, a male, had been ill since the latter part of the year 1871. When first seen in December, 1872, he showed an icteric discoloration of the skin and profound anæmia. He complained of dyspnœa and pain in the right flank, and an irregular elevation of temperature was noted. No history of dysentery could be obtained. The diagnosis of abscess of the liver was ventured. Death occurred in the month of May, 1873.

The autopsy showed an abscess the size of an orange in the right lobe of the liver, situated in the substance of the organ 2 to 4 cm. below the convex surface. It extended to the posterior portion and was surrounded, for the most part, with a pyogenic membrane. This abscess had broken through and communicated by an opening, the size of a franc-piece, with the inferior vena cava. On opening this vessel pus escaped through the incision. No other abscess was present in the liver, but on its superior surface a depressed scar existed which was regarded as due to a healed abscess. The intestines gave no evidence whatever of any old dysenteric process. The lungs, on the other hand, were the seat of several (five or six) abscesses, each the size of a five-franc piece or larger. They were embolic in origin.

The first of our cases was encountered in 1893. The patient was under the care first of Dr. Osler, and later of Dr. Halsted, in the Johns Hopkins Hospital. The clinical history of the case is taken from the hospital records, for which I wish to thank those gentlemen. The patient is a man, aged fifty-one years, a native of this country, and when admitted to the hospital (February 9th) complained of chills, fever, and sweating. He had always been healthy, excepting an attack of ague at the age of ten years; he had been a bartender for fifteen years, and a hard drinker. He admitted having had both syphilis and gonorrhœa. The illness for which he entered the hospital had begun with an attack of nausea and vomiting about two months before admission, although the patient stated that six weeks before he began to experience chilly sensations and to suffer from severe sweating, which came on about three o'clock every morning. On the night before his entrance he had had a severe chill. During the previous two months he had lost from twenty to thirty pounds in weight, and his appetite had gradually failed.

The physical examination showed a large, well-formed man whose complexion was sallow, but who showed no marked signs of cachexia. The pulse was 84, and soft; the bloodvessels a little stiff; the tongue dry and brown. The examination of the thoracic organs was negative. The note relating to the abdomen was as follows:

"Abdomen a little full, symmetrical; veins quite distinct; soft and painless on pressure. The edge of the liver is indistinctly felt at about the level of the umbilicus on the right side, and in the middle line about 5 cm. above the umbilicus; it does not feel prominent, and the edge is not at all distinct. The upper limit of absolute dulness in the mid-sternal line is at the base of the ensiform cartilage, in the parasternal line at the lower border of the fifth rib; in the mammary line on the fifth rib; in the mid-axilla on the sixth rib; in the nipple-line there are 19 cm. of liver-dulness. Behind there is flatness at the upper margin of the eighth rib. Tenderness exists on deep pressure in the liver regions and along the costal margin. Enlarged glands are nowhere present." The rectal examination was negative, and the stools, which were repeatedly examined, did not show any amœbæ. The blood ex-

amination gave red corpuscles 3,088,000; white corpuscles, 22,500 to the cubic millimetre. On February 10th and 11th the patient suffered from shaking chills, followed by sweating, the temperature reaching to 104.6° F. on the 10th and 103° F. on the 11th.

The diagnosis seemed to lie between abscess and neoplasm of the liver. Dr. Osler was inclined to consider the case one of abscess and advised an exploratory operation, an opinion in which Dr. Halsted, after seeing the patient, concurred. It should be mentioned here that no history of diarrhœa was obtainable until after the operation, when it developed that in the previous summer the patient had suffered from looseness of the bowels, which lasted off and on about four weeks.

The operation was performed by Dr. Halsted on February 16th, and consisted of an incision 14 cm. long, parallel to and about 3 cm. below the costal margin. The liver was found to be free from adhesions excepting a few up under the diaphragm. The surface was smooth and the organ appeared symmetrically enlarged. Aspirating-needles were introduced at various points, at first with negative results. The abdominal wound was then closed and exploratory punctures were made in several of the lower intercostal spaces. Finally, the needle after being introduced in the sixth space, about the anterior axillary line, and passed through the diaphragm and about 5 cm. of the liver-substance, was found to have entered a cavity from which about 20 c.cm. of a brownish pus-like fluid having the appearance of anchovy sauce was aspirated. A second incision, parallel to the first and about 8 cm. above it, was then made and portions of the sixth and seventh ribs were resected. The pleural cavity having been shut off by means of gauze, the diaphragm was incised and the peritoneal cavity protected in a similar manner. A portion of the liver measuring 6 x 3.5 cm. was thus exposed. The operation was interrupted at this point in order to permit of the formation of adhesions. The next day Dr. Halsted incised the liver through the opening and at the depth of about 5 cm. came upon a large cavity from which 1000 to 1500 c.cm. of fluid similar in appearance to that aspirated were evacuated. A large drainage-tube was introduced and the wound packed with iodoform-gauze.

The patient did well until the 25th instant, eleven days after the second operation, when he had a severe hemorrhage into the wound from which he never recovered, death taking place on February 27th.

Dr. Thayer examined the fluid aspirated on the first day and also that obtained the next day at the second operation. His report is as follows: "The fresh specimen contains no well-preserved cells of any sort, but merely a granular débris. In three or four stained specimens not a single well-preserved cell was found; however, an occasional more or less broken-up liver-cell was seen, but never any leucocytes. Neither bacteria nor amœbæ were discovered in these specimens. The contents of the abscess evacuated at the operation show a similar composition to those obtained by aspiration. Bacteria were not found in cover-glass preparations, nor were cultures more successful. After some search I found, in the fresh material, a number of quite actively motile amœbæ showing every characteristic of the amœba coli. I am inclined to think that the nature of the fluid-contents of the abscess might have justified us in strongly suspecting the abscess to have been of amœbic origin, even had amœbæ themselves not been found."

The autopsy was performed twenty-two hours after death. Such extracts only from the protocol are given here as are germane to the case, and are not covered by the clinical history:

The peritoneal cavity was entirely normal in appearance; the pleural cavities likewise were normal. The liver weighed 2600 grammes; its dimensions were 25 x 14 x 5.5 cm. The right lobe contained a funnel-shaped cavity which occupied a position near the anterior edge, 5 cm. distant from the superior border. In its widest parts this cavity measured 4 cm. in diameter and led directly into a cavity in the substance of the right lobe of the liver the size of an orange. Surrounding the edges of the cavity on the anterior surface of the organ moderately fresh adhesions, easily broken down, existed which united this surface with the abdominal parietes. The walls of the abscess were composed for the first 3 cm. of liver-tissue the inner surface of which was covered with necrotic material and pus, and posteriorly by a dense and more fibrous tissue covered with similar material. The deepest part of the cavity is the largest, measuring 10 cm. in its greatest diameter. The inferior vena cava passes directly across the upper portion of this cavity, and at a point 2 cm. from the superior border of the liver it is occupied by a thrombus which about half fills its lumen. On removing the thrombus two perforations, one the size of a split-pea, the other of a poppy-seed, were disclosed. These led directly into the cavity in the liver. For a distance of 5 cm. the adventitial coat of the vena cava was in contact with the abscess and assisted in the formation of its posterior boundary wall. The abscess reached the superior surface of the liver at the most posterior part and below impinged upon the right adrenal gland and superior surface of the kidney. The right lobe of the liver contains as many as a dozen smaller abscesses, ranging from a hemp-seed to a walnut in size, of which the larger ones were filled with gelatinous pus and limited by a capsule averaging 1 mm. in thickness; the smaller ones showed either softening or merely a yellow necrosis. The gall-bladder contained a blood-clot the size of a duck's egg. The intestine was free from ulcerations, but several pigmented and somewhat depressed spots existed in the large intestine, and in the ileum, about 50 cm. above the ileo-cæcal valve, a puckered area 1 cm. in diameter was also present. The microscopic examinations of sections from these parts showed the normal structures of the mucosa. No evidence of previous ulceration was made out. Each lung contained an embolic abscess. The larger, the size of a pigeon's egg, was located in the upper lobe of the left lung. The branches of the pulmonary artery (the largest the size of a goose-quill) going to this area were occupied by a partially softened thrombus.

The examination of the fresh contents of the abscess-cavity at the autopsy showed living amœbæ in moderate numbers. Several varieties of bacteria were also present. The smaller abscesses and necrotic areas contained streptococci in pure culture. Amœbæ were not found in these. The pulmonary abscesses were of streptococcus origin.

The second patient was a male, aged forty-two years, who dated his illness from September, 1895. He began at this time to have regularly recurring chills and fever, followed by profuse sweating. His condition did not improve during November and December, and from the last week in the latter month he had kept his bed constantly. On January 2d he began to suffer from a cough, and the next day he noticed that

the expectorated matter was tinged with blood. He was admitted to the hospital on January 7, 1896.

The physical examination at this time disclosed enfeeblement of breath-sounds and râles over the right lung; the liver was apparently not enlarged, nor was it sensitive even on deep pressure. The expectoration had the appearance of anchovy sauce, and upon microscopic examination showed, besides pus-cells, red blood-corpuscles, and epithelial cells, distinctly motile amœbæ and crystals believed to have been bilirubin. The fecal matter obtained by means of the rectal tube did not show amœbæ. No history of a previous dysentery could be obtained, with the exception of an attack of diarrhœa lasting some three days, from which he had suffered late in November. The note of January 22d, by Dr. Osler, is as follows: "Expectoration of the same character as previously noted; the patient has not had a chill since admission; temperature still irregular, occasionally reaching normal, but extending as high as 105° F. In the right axillary line the dulness reaches 12 cm. in the vertical direction; nowhere any signs of a cavity." On February 1st the patient was taken with sudden pain in the right side and immediately complained of dyspnœa and oppression. On examination the next day Dr. Thayer noted fulness and immobility of the right chest, increased vocal fremitus, and on percussion general wooden flatness. He was transferred to the surgical ward, and the sixth rib on the right side resected by Dr. Bloodgood. A large quantity of pus of a pale-brownish color was evacuated. The temperature continued elevated; the discharge from the opening was profuse, and there was much shortness of breath. Amœbæ were first found in the discharges obtained by means of the rectal tube on February 4th, and on the 9th instant diarrhœa set in, the patient having eleven movements on that day. Numerous amœbæ were found in the discharges obtained by means of the rectal tube on the 10th. The patient grew very feeble and died at 5 P.M. on the same day.

The autopsy was made three hours after death. The most important findings were as follows: with the exception of the dense adhesions which bound the liver to the diaphragm, the peritoneal cavity was normal. The liver was not enlarged, its inferior edge extending only a finger's breadth below the costal margins. The right lobe of the liver contained an abscess which was in direct communication, through the diaphragm, with a cavity in the right lung. The two together in their several diameters measured 19 x 14 x 9 cm. There was a large defect in the diaphragm corresponding with the opening, and to the edges bordering upon it the liver below and the lung above were adherent. The contents of the abscesses consisted of a thick, grayish, necrotic-looking material, rapidly disintegrating, intermingled with which was a softer, anchovy-sauce-like fluid. The walls of the cavity were dense and fibrous, with an inner lining of soft, necrotic, partly purulent material. The part of the abscess within the liver extended backward to the capsule of Glisson, and in front was separated from the surface by a narrow zone of liver-tissue. This abscess was, indeed, not entirely limited posteriorly by the thickened capsule of the liver, for it involved the adventitial coat of the inferior vena cava and had ruptured into this vessel near the point of entrance of the hepatic veins. The opening measured 1.5 mm.; about it the intima of the vessel was lifted up, and upon exertion of the least pressure a grumous yellowish-red material

passed into the vessel. The inferior cava, beginning at a point just above the rupture, contained an occluding, partly decolorized, firm and adherent thrombus, which extended upward and projected into the right auricle, filling about one-third of it. Some of the main hepatic veins also contained thrombi which were firm and decolorized in the upper, and red and soft in the lower portions. The main abscess in the lung was limited to the lower lobe, the middle and upper lobes having been compressed. The pleura was covered with a yellow, opaque pseudo-membrane; it was quite free from any accumulation of fluid. The point of perforation of the pleura was not discovered.

The small intestine showed only congestion and a few small areas of ecchymosis, chiefly in the mucous membrane. The large intestine, on the other hand, was the seat of many ulcers, which, for the most part, did not reach the size of a bean. They were within the mucous membrane or at most projected very superficially into the submucosa. They were quite regular and smooth, not undermined, and covered with sticky, pus-like contents. The majority were in the cæcum and upper colon; they were fewer and well separated in the sigmoid flexure and rectum.

The fresh material taken from the abscess common to the liver and right lung and from the intestinal ulcers showed many living and amœboid amœbæ. The left lung contained many small abscesses, presumably of embolic origin, and the left lobe of the liver two or three, of which no one was much larger than a split-pea. In none of these were amœbæ found. On the other hand, they, as well as the large abscess, contained cocci in clumps. The bacteriological examination revealed the staphylococcus pyogenes aureus in these situations, as well as in the blood of the heart and organs generally.

I shall refrain from all discussion of these cases except to draw attention to two points of more than ordinary interest. The first is the existence of an amœbic abscess of the liver without intestinal lesions, which seems not to have had any necessary relation to the disease, since the depressed area described in the intestines in the first case showed very little that was abnormal upon microscopic study. The second is the probability that the intestinal lesions, far from being the necessary precursors of those in the liver and later in the lung, appear in the second case to have followed infection from above. The acute character of the intestinal ulcerations agrees so well with the appearance of the acute dysenteric attack upon the day before the patient's death that I am constrained to regard them as of very recent development. It will be recalled that the feces were repeatedly examined for amœbæ with negative results until February 4th, when they were first found, and on the 9th, when diarrhœa set in, they were present in large numbers. As to the mode of infection, what one would at first think of would be the biliary passages and the bile.

HABIT-CHOREA.

By Wharton Sinkler, M.D.,
of Philadelphia.

Gowers considers the term "habit-chorea" a misnomer, and regards the affection as a form of spasm or tic, rather than a variety of chorea. The same view is taken by several other writers. Many authors, among whom are Strümpell, Hirt, and Gray, do not mention the disease at all. Weir Mitchell, who described habit-chorea in 1881,[1] gave the following reasons why he regarded the affection a form of chorea: first, the fact that it usually occurred in children; secondly, that in cases of habit-chorea there is generally a history of some fall from the plane of health, and a state of irritability and nervousness; the circumstance that, in some instances, habit-chorea lapses into well-pronounced chorea of the ordinary type; and, finally, that the same remedies which are most useful in Sydenham's chorea are of the greatest value in habit-chorea. The largely attended clinical service at the Philadelphia Infirmary for Nervous Diseases has given me the opportunity of studying an unusual number of cases of habit-chorea, and the result of this observation has confirmed my belief that Mitchell's view as to the nature of the affection is correct. There are undoubtedly cases to which the term habit-spasm is correctly applied, and I believe these cases are properly classed with the different forms of tic. I think that the differences of opinion as to the disease are mainly due to the fact that there are two varieties of habit-chorea. The first is one in which the disease is evidently the result of a trick or habit in a child or adult, while in the second class the affection is due to some predisposing cause, such as is operative in the production of Sydenham's chorea.

The movements in both forms are much alike in character and extent. In both the irregular movements and spasmodic twitchings are like those of chorea minor, but are confined to a limited region of the body. They cease during sleep, are increased by excitement, and may or may not be controlled by an effort of the will. The movements in habit-chorea are unlike the spasmodic twitchings which occur in the different varieties of tic, and this difference may be notably seen by comparing a case of facial tic (tic convulsif) with a case of habit-chorea which affects the upper facial muscles. In habit-chorea the onset may be abrupt or gradual, and the irregular movements are confined to one portion of the body. In the majority of cases the region selected is the face. The spasmodic twitchings occur at intervals sometimes of a few minutes, or the intervals may be so short that the movements are almost incessant. There

[1] Lectures on Diseases of the Nervous System. Lecture VIII.